Abstract

Charles University in Prague

Faculty of Pharmacy in Hradec Králové

Department of Biological and Medical Sciences

Student: Terezie Poláková

Supervisor of master thesis: PharmDr. Miroslav Kovařík, Ph.D.

Title of master thesis: Assessment of energy metabolism in patients with chronic obstructive pulmonary disease.

Chronic obstructive pulmonary disease (COPD) is the name for lung disease with systemic consequences. Besides the respiratory symptoms there are also described changes in body metabolism, which could lead to the development of serious metabolic syndrome called cachexia.

The main aim of this study was to compare the resting energy expenditure (REE) and nutrition substrate utilization in 12 patients with advanced form of COPD from the Czech Multicentre Research Database of COPD (5 females and 7 males, mean age 68 ± 6 years) and in 9 patients of control group without respiratory impairment (5 females and 4 males, 62 ± 4 years).

Assessment of body metabolism was determined by method of indirect calorimetry. Measured REE was then compared with prediction based on Harris-Benedict equation. The utilization of main nutrition substrates was determined from the respiratory quotient and urea nitrogen loss in urine.

We found that measured REE in COPD patients was about 20 % higher than in control group. 83 % of COPD patients were hypermetabolic, 17 % normometabolic and none of them hypometabolic. By contrast in control group were 56 % of patients normometabolic, 33 % hypermetabolic and 11 % hypometabolic. While we found no statistical significant differences in total amounts of utilized nutrition substrates between COPD and control group, the relative proportion of utilized proteins was significantly lower in COPD in comparison with control group.

This study approved the increase in REE and changes of substrate utilization in patients with advanced form of COPD.

Key words: chronic obstructive pulmonary disease, Czech National Research Database of COPD, resting energy expenditure, nutrition substrate utilization